

Atty Dkt. No.: 10990105-1  
USSN: 09/302,898

### **REMARKS**

In view of the following remarks, the Examiner is requested to allow Claims 1-18 and 20-48, the only claims pending and under examination this application following entry of the above amendments.

#### ***Claim Rejections – 35 U.S.C. § 103(a)***

Claims 1-18 and 20-48 were again rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Baldeschwieler et al. (US Patent No. 6,015,880) in view of Weber et al. (US Patent No. 4,328,504). This rejection is respectfully traversed.

The Applicants reiterate their argument advanced in their October 5, 2005 Amendment and Response that Weber et al. is non-analogous art to the claimed invention of the present application and therefore not properly combinable with Baldeschwieler to reject the claims of the present application. In addition, the Applicants reiterate that they discovered the source of a problem that was not appreciated in the art and solved that problem, which is sufficient to overcome the Examiner's assertion of obviousness. The Examiner has responded only to the first of these arguments, and not to the second.

In the Office Action, the Examiner asserted that the ink jet art of Weber et al. is analogous to the art of Baldeschwieler et al. because Baldeschwieler et al. uses an ink jet device in Example 1. The fact remains that Baldeschwieler et al. does not use printing ink whereas Weber et al. does, and that Baldeschwieler et al. is not printing onto paper whereas Weber et al. is. One would not expect the problems faced by Weber et al. to be reasonably pertinent either to those faced by Baldeschwieler et al. or to those faced by the Applicants. The Examiner asserted only that both Baldeschwieler et al. and Weber et al. employ ink jet devices, which allegedly makes the documents analogous.

The Applicants submit that the Examiner's assertion that Baldeschwieler et al. and Weber et al. are analogous is inconsistent with the criteria for analogous art set forth in MPEP § 2141.01(a), namely:

Atty Dkt. No.: 10990105-1  
USSN: 09/302,898

'In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned.' *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). See also *In re Deminski*, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986); *In re Clay*, 966 F.2d 656, 659, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992) ('A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem.');

*Wang Laboratories Inc. v. Toshiba Corp.*, 993 F.2d 858, 26 USPQ2d 1767 (Fed. Cir. 1993); and *State Contracting & Eng'g Corp. v. Condotta America, Inc.*, 346 F.3d 1057, 1069, 68 USPQ2d 1481, 1490 (Fed. Cir. 2003) (where the general scope of a reference is outside the pertinent field of endeavor, the reference may be considered analogous art if subject matter disclosed therein is relevant to the particular problem with which the inventor is involved).

Conventional ink jet printing onto paper would not logically commend itself to an inventor in the biopolymer array art in considering problems with making arrays, nor would the particular problems with conventional ink printing be reasonably pertinent to making arrays. As such, Weber is not properly combinable with Baldeschwieler.

Moreover, the Examiner has not addressed the fact that the Applicants were the first to recognize a specific problem in the fabrication of biopolymer arrays. Specifically, the present invention is directed to the problem in which positive features during an array assay nonetheless give rise to a weak signal that may be difficult to distinguish from background, particularly at the feature border. This problem can become exaggerated when the array pattern of a given array is different from the target array pattern according to which the array was fabricated due to errors arising during the manufacture process.

The Applicants identified that, with respect to fluid deposition produced arrays, it would be useful to identify any discrepancies between a target array pattern and an actual produced array pattern because the problems that such discrepancies can cause. The Applicants were the first to realize that such identification would be desirable for a number of different reasons, e.g., to correct the errors during manufacturing, to know before using the array which features may have discrepancies and therefore could give rise to suspect results, etc.

These problems were not appreciated by Baldeschwieler and were first identified and then solved by the Applicants in the present application.

Atty Dkt. No.: 10990105-1  
USSN: 09/302,898

There is a body of decisional law holding that this is basis for unobviousness. "[Where] there is no evidence of record that a person of ordinary skill in the art at the time of [an applicant's] invention would have expected [a problem] ... to exist at all, it is not proper to conclude that [an invention] ... which solves this problem ... would have been obvious to that hypothetical person of ordinary skill in the art." *In re Peehs*, 612 F.2d 1287, 1290, 204 USPQ 835 (CCPA 1980) (citing *In re Nomiya*, 509 F.2d 566, 572, 184 USPQ 607, 612-13 (CCPA 1975))(emphasis added).

The previous Examiner asserted that Weber et al. corrects errors in printing, and that the combination of Baldeschwieler et al. and Weber et al. solves a problem. However, the Examiner has not established that the problem in the biopolymer array art that was recognized and solved by the Applicants was known or expected *in the biopolymer array art*. Baldeschwieler et al. is not concerned with correction of errors. The Examiner is improperly assuming as proven precisely that which must be proven.

The Applicants also reiterate that without an appreciation of the problem solved by the present invention, there would have been no motivation to combine the teachings of Baldeschwieler et al. and Weber et al. Without knowledge of the problem, there would have been no need to combine the documents, the expense of making the combination would be high, and there would have been no expected benefit to making the combination.

Furthermore, one would not be motivated to go the extra step of correcting for errors so as to reduce discrepancies between the actual and target array pattern, because one would not appreciate that such discrepancies would occur or further that such discrepancies, if present, would have any effect on the usability of the array. In fact, one of skill in the art would not have been motivated to modify Baldeschwieler because any such modification would have added to the expense of the process without any benefit.

In addition, the combination of documents fails to teach or suggest all the elements of all the rejected claims. For example, forwarding the array and medium to a remote user (Claim 18); the fluid dispensing head with multiple drop dispensers (Claim 21); and the control processor's comparing and evaluating function when multiple error indications are generated (Claim 23) are included in the rejection with no apparent rationale or justification.

Atty Dkt. No.: 10990105-1  
USSN: 09/302,898

Accordingly, Claims 1-18 and 20-48 are not obvious under 35 U.S.C. § 103(a) as over Baldeschwieler et al. (US Patent No. 6,015,880) in view of Weber et al. (US Patent No. 4,328,504). Withdrawal of this rejection is respectfully requested.

**CLAIM REJECTIONS - 35 U.S.C. §§ 102/103**

Claims 1-18 and 20-48 have been newly rejected under 35 U.S.C. 102(a) as allegedly being anticipated by Graves et al., Anal. Chem. 1998, 70:5085-5092 (hereinafter "Graves"), or in the alternative, under 35 U.S.C. § 103(a) as allegedly being obvious over Graves. This rejection is respectfully traversed.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Moreover, an anticipation rejection that is based on inherency must be supported by factual and technical grounds. Moreover, an anticipation rejection that is based on inherency must be supported by factual and technical grounds establishing that the inherent feature must flow as a necessary conclusion, not simply a possible conclusion, from the teaching of the cited art. *Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Int. 1990); *In re Oelrich*, 666 F.2d 578, 212 U.S.P.Q. 323, 326 (C.C.P.A. 1981).

Fundamentally, Graves is not concerned with fabricating arrays according to a target array pattern. The Examiner acknowledges this fact at the penultimate line of page 4 of the Office Action. Graves is concerned primarily with reproducibility of deposition. Comparison for reproducibility of a first printed array with subsequent printed arrays, as in Graves, is not the same as Applicants' claims, which recite that a polynucleotide deposition system is operated to deposit an array of polynucleotide containing fluid droplets on the substrate in accordance with a target array pattern determined by a processor in communication with the deposition system.

The Examiner has asserted that such a target array pattern is inherent in Graves by

Atty Dkt. No.: 10990105-1  
USSN: 09/302,898

virtue of the reproducible arrays of Graves. Such an assertion is conclusory, and is unsupported by factual and technical grounds establishing that the inherent feature must flow as a necessary conclusion. In addition, Graves fails to teach or suggest all the elements of all the rejected claims. For example, forwarding the array and medium to a remote user (Claim 18); the fluid dispensing head with multiple drop dispensers (Claim 21); and the control processor's comparing and evaluating function when multiple error indications are generated (Claim 23) are included in the rejection with no apparent rationale or justification. Accordingly, because Graves does not teach every element of the presently claimed invention, there is no anticipation.

With respect to the rejection under 35 U.S.C. § 103(a), the Examiner asserted that it would have been obvious to use the method of Graves to produce arrays in accordance with a defined pattern. Office Action at page 5.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation either in the cited references themselves or in the knowledge generally available to an art worker, to modify the reference or to combine reference teachings so as to arrive at the claimed method. Second, the art must provide a reasonable expectation of success. Finally, the prior art reference must teach or suggest all the claim limitations (MPEP § 2143). The teaching or suggestion to arrive at the claimed method and the reasonable expectation of success must both be found in the prior art, not in Applicant's disclosure (MPEP § 2143 citing with favor, *In re Vaeck*, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991)).

Applicants submit that Graves does not teach or suggest a polynucleotide deposition system operated to deposit an array of polynucleotide containing fluid droplets on the substrate in accordance with a target array pattern determined by a processor in communication with the deposition system. The software of Graves permits the user to specify movement in two directions. Graves at page 5086, first column. This is very different from a target array pattern that is determined by a processor in communication with the deposition system, as in Applicants' present claims. There would have been no motivation to employ such a target array pattern absent the guidance provided by the Applicants' disclosure.

Atty Dkt. No.: 10990105-1  
USSN: 09/302,898

Therefore, for at least the reason that each and every element of Applicants' claims is not disclosed in Graves, and there is no motivation in Graves itself to modify the disclosure of Graves, there is no *prima facie* obviousness. Withdrawal of this rejection is respectfully requested.

Atty Dkt. No.: 10990105-1  
USSN: 09/302,898

**CONCLUSION**

The Applicants submit that all of the claims are in condition for allowance, which action is requested. If the Examiner finds that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone Bret Field at (650) 833-7770.

The Commissioner is hereby authorized to charge any underpayment of fees associated with this communication, including any necessary fees for extensions of time, or credit any overpayment to Deposit Account No. 50-1078, order number 10990105-1.

Respectfully submitted,

Date: March 3, 2006

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